

Nebraska Information Technology Commission  
**Community Technology Fund 2002**

**Application Form**

**Project Title: City of Aurora, Utilities GIS**

**Submitting Entity: City of Aurora**

**Grant Amount Requested: \$25,000**

**Project Contact Information (Name, address, telephone, fax, and e-mail address):**

**City of Aurora**

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**Aurora, NE 68818**

**Executive Summary:**

**REDUCING THE COST OF TECHNOLOGY THROUGH PARTNERING WITH OTHER  
PUBLIC AGENCIES AND WITH PRIVATE INDUSTRY**

We have two primary purposes for seeking this grant. We wish to implement a GIS system in Aurora but more importantly, we wish to demonstrate that a smaller Nebraska Community (cities of the 2<sup>nd</sup> Class – less than 5,000 pop.), by PARTNERING with other governmental units can find an economical means to implement GIS by using the digital data bases other public and private agencies and organizations have already compiled about our communities. The use of GIS is fairly common among the state's larger communities. One must ask the question, "Why are GIS applications not used by smaller, Nebraska communities?" The answer is not that smaller communities do not grasp the beneficial aspects of technology applications, it is cost. It is costing some Nebraska cities of the First Class (pop. Greater than 5,000) \$150,000 to \$200,000 to set up their GIS programs. We feel that by using GIS resources currently available from other governmental jurisdictions, the City of Aurora will demonstrate that GIS can be affordable and a useful tool for the smaller communities of Nebraska which establish partnering relationships with other local and state units of government. We are seeking funds for the development and implementation of a public works and utilities Geographic Information System (GIS) for the City of Aurora with the data available to the public. This will be a powerful tool that our community will use for accurate record keeping, inventory, planning, clerical automation, analyses, reporting and maintenance of our utility systems. Information contained within the GIS will easily be shared with other city

and county agencies, such as the police, fire, ambulance, economic development, roads, and extension. The GIS will integrate county parcel and landowner GIS information that the Hamilton County Assessor is currently compiling in the County GIS system. By integrating the county and city level GIS we aim to encourage further agency co-operation in an effort to save taxpayer dollars and provide timelier taxpayer services. Cooperation from the South Central Nebraska RC&D, Department of Roads and Upper Big Blue NRD in sharing existing data bases, as well as the existing data base already developed by the City's consulting engineering firm will form the foundation for our GIS project. The City's existing policy of requiring that new subdivisions and utility extensions be submitted in digital format will insure the continual upkeep of the GIS data base.

## Goals, Objectives and Outcomes

1. Describe the project, including:

- Problem statement and needs assessment
- Goals (i.e., increasing Internet literacy)
- Project activities or outputs (specific, measurable steps to get to the goal--i.e., offering six sessions of classes). Include training and staff development activities if appropriate.
- Expected outcomes (impact on the project's beneficiaries--i.e., at least 60 participants will learn to search for information on the Internet searches and send e-mail)

(20 points, 5 points for each bulleted item)

Like other smaller Nebraska communities, there are two methods of storing information about utility systems at the City of Aurora. Utility records are either stored in paper based utility atlases or as-built drawings, or as knowledge retained by long-time utility department employees. Both methods of storing data are problematic. Paper maps are subject to wear and tear, can only hold a certain amount of information, and are expensive to maintain. Employees leave the city, are sometimes unavailable due to sickness or vacation, and tend to forget details as time goes on. The current state of affairs is rapidly becoming unworkable due to the growth of the City of Aurora and increasing information management demands being place on city employees to meet customer expectations and local, state and federal regulations (e.g., GASB34 - Governmental Accounting Standards Board, Statement 34 for asset reporting). In addition, as capital improvement dollars become more limited, the City of Aurora must target these dollars on assets that most need replacing. The City of Aurora requires an accurate, easy to update, and accessible means of recording public works and utilities information about features such as hydrants (location, last exercise date, pressure test results, etc.), water and sanitary lines (date installed, construction material, position and depth, etc.).

Due to the cost of creating a GIS data base from scratch, smaller communities can not allocate the local resources necessary for digitizing their existing paper records. Other governmental agencies have or are in the process of acquiring considerable GIS information which can and will be made available to local communities. However, before that type of cooperative sharing will take place among governmental agencies, someone has to be the first to retrieve all of the data and determine which agencies may possess

digital information relative your community. Aurora, as it has been in the past in the areas of housing, economic development and other areas, is willing to establish the smaller community model for GIS, and not just GIS, but GIS at a cost that is significantly more affordable to the smaller communities of the state that is the present individual community procurement model.

Goals:

- Demonstrate that smaller Nebraska communities can, using available resources and personnel, implement and benefit from GIS applications.
- Provide faster, easier access to utilities information for city administration and employees for both management and maintenance of assets.
- Provide faster, more cost effective utility maintenance and repair services to the citizens of the City of Aurora and reduce unscheduled outages.
- Leverage investment made in GIS technology by Hamilton County Assessor's office to aid city utilities management.
- Update existing utilities information, and record employee knowledge before the "brain trust" leaves the employment of the city.
- Reduce taxpayer cost for public works projects by providing contractors with accurate "as built" utility information
- Place GIS data on the City's economic development website for access by potential companies looking to locate plants in Aurora.

Activities:

- Design and create a utilities database that captures all the necessary information items desired by city administrators and staff.
- Capture and translate utilities information from paper and translate into the GIS database.
- Capture and translate (via interview sessions) utilities information from employees in the GIS database.
- Integrate Hamilton County's GIS data and any suitable GIS data from other partnering local and state agencies (Upper Big Blue Natural Resource District, Nebraska Department of Transportation, South Central RC&D, JEO & Assoc. (City Engineers) etc.).
- Train city administrators and staff in the maintenance and use of the GIS for public works and utilities using paid trainers and for no cost using staff from the project's partners; South Central RC&D, Hamilton County, private surveying firm, other cities.

Expected outcomes: All citizens of the City of Aurora will benefit from implementation of this GIS; and as we demonstrate our success and Model for Intergovernmental Cooperation for GIS data we would expect other small Nebraska communities to benefit.

- Using data available from cooperating governmental agencies, the cost of creating the Aurora GIS data base will be greatly reduced.
- Faster, more efficient response to customer complaints concerning utilities, for example, a customer may call in to complain about a sewage backup. The city administrator can quickly locate the customer's location in town (via the Hamilton County Assessor's parcel map) and locate the sewer service. The public works crew can equip themselves with the proper repair equipment and repair pieces

without having to go to the field first, scout the location, and return to the city depot for parts and equipment.

- Better management of city utility capital improvement money. Decision makers will be able to take pro-active stance, and target assets for replacement or preventative maintenance based on installation date, last date of maintenance, and current condition.
- Reduction of engineering costs by reducing the need for on site data acquisition for water and sewer projects and extensions.
- Better communication between public works and utilities and public and private utility companies operating in the city (telecommunications, cable TV, etc.) especially in joint maintenance projects (e.g., the city digs up the road to access a sewer line, and notifies the telephone company that access is available).

## **Project Justification**

**2. Explain how the proposed project supports one or more of the funding priorities by describing how the project:**

- **Uses information technology to address community needs related to community and economic development, the delivery of local government and library services, and health care.**
- **Uses information technology to address community needs in innovative ways or initiates the use of information technology to address community needs.**
- **Demonstrates strong collaboration within a community or region in addressing IT development.**

**(10 points)**

- The City of Aurora has made great efforts to foster both industrial and community growth. The ability to manage the public services that supply this growth is paramount to the continued prosperity of the City of Aurora. Maintenance and delivery of high quality public utility services have a direct effect of the growth potential of a small city. After implementation of this utilities GIS, City officials will have much better recognition of the current capacity of the utility system to handle further expansion (for both housing and industry). Administrators will have a better understanding of portions of the utility system that are weak and/or need replacing. GIS will allow city administrators to deliver utility services in a timelier and more efficient fashion, for example, all features (water valves, manholes, etc.) be located on the GIS and utility crews will be able to locate those features using a simple handheld GPS (Global Positioning System) even under snow or vegetation cover.
- The City of Aurora may utilize the GIS to provide utilities service and information in innovative ways. Rather than waiting for assets to break or wear out, city administrators may target maintenance issues using the GIS before problems arise, preventing unscheduled service outages. The utility GIS will be made available through the World Wide Web to citizens. The City of Aurora will be able to communicate scheduled maintenance through the on-line utilities GIS.

- This project demonstrates strong collaboration between numerous local, county and state organizations including Hamilton County, Upper Big Blue Natural Resource District, Department of Natural Resources, Nebraska Department of Transportation. Data will be used from each of these agencies in the utility's GIS project and the City of Aurora will make it's utility GIS data available to co-operating agencies. Private sector partners (JEO & Assoc. and Katt Surveying) are also participating through the provision of data and or donated training.

**3. Describe the expected benefits (both tangible and intangible) of the proposed project. If applicable, include any economic benefits or long-term cost savings. (5 points)**

The proposed public works and utilities GIS will directly benefit the citizens of the City of Aurora and other small communities by keeping down costs associated with maintaining the city utility systems and creating GIS data bases. By establishing the cooperative model of GIS partnering, many of Nebraska's smaller communities are potential beneficiaries.

- Reduced cost of GIS data base creating and maintenance
- Timelier public works and utilities maintenance
- Better targeting of capital improvement dollars
- Increased cost savings through targeted maintenance
- Timelier and more detailed information concerning existing and proposed service outages.
- Better state and federal reporting capabilities (e.g., for GASB34).
- Reduced cost for consulting engineering services

## Technical Impact

**4. Describe the hardware, software, and communications needed for this project and explain why these choices were made. (5 points)**

- Sufficient computing and storage capacity is available; an HP 750c printer or equivalent will be required to make paper copies of maps for field use.
- One copy of ESRI ArcView 8.1 GIS software is required. ESRI GIS is the industry standard GIS software and is in use amongst nearly all Nebraska local, county and state entities.
- No additional communication capabilities are required

**5. Address any technical issues with the proposed technology including:**

- **Conformity with generally accepted industry standards. Projects which interface with other state systems (such as distance learning systems) should also address NITC technical standards and guidelines.**
- **Compatibility with existing institutional and/or statewide infrastructure.**

- **Reliability, security and scalability (future needs for growth or adaptation).**  
(5 points)

The GIS will be designed and built with adherence to Nebraska state standards for GIS data. The digital map data will be developed in Nebraska State Plane Coordinate System, NAD83. There are no NITC technical standards and guidelines for GIS currently. GIS technology has been around since the 1970's, and has evolved to a point where the standard desktop software packages are very reliable. There are no security issues, although city administrators may decide to not post fresh water system data on the World Wide Web to guard against bio-terrorism attacks. ESRI Arcview GIS is completely scaleable, and can record data on millions of elements – the City of Aurora will contain information on fewer than 5000 elements, so there is plenty of capability left for growth. ESRI ArcView is compatible with the Hamilton County system as well as the other participating agencies and private partners.

#### **6. Describe how technical support will be provided. (5 points)**

The City of Aurora will receive training from ESRI certified instructors on the use of the GIS. ESRI provide technical support on all its software products for 1 year after purchase. Also, the city staff will continue to develop their relationship with Hamilton County staff to help each other out with GIS problems. The South Central Nebraska RC & D has committed to providing staff support for training of local personnel as has private sector partner, Katt Surveying, as well as other city partners. Hamilton County employees will be using the same software and be able to assist one another and share training costs and are literally “just down the street”. The city will also join and encourage participation of our employees in the appropriate state GIS associations. Finally, consultants are available on a fee basis.

### **Preliminary Plan for Implementation**

#### **7. Describe the project sponsor(s) and stakeholder acceptance. If letters of support are included, list the entities or individuals submitting letters of support and briefly summarize the letter's content. Include information on any match being provided by project sponsors. (5 points)**

This GIS project is being sponsored by the City of Aurora and our Utility Department. Funds to match the Community Technology Fund will come from both the City and Utility budgets. All of our participating partners have submitted letters of support and commitment (Dept. of Roads commitment is verbal).

The following have submitted letters of support for this project:

City of Aurora: Letter pledging required matching funds as necessary for project to succeed.

Hamilton County Assessor: Pledging to share information and GIS data base currently being developed. Further to continue working together to reduce the costs of both agencies.

Upper Big Blue NRD: Pledging access to data in their data base.

South Central Nebraska RC&D: Committing resources and staff to assist with the Aurora project.

Katt Surveying: An active user of ArcView software, pledging to donate training assistance.

JEO & Assoc.: Advising that they have an extensive data base on Aurora's infrastructure which is available for this project.

Nebraska Department of Roads: Verbal commitment to make available any relevant air photos or other data in their files.

Kansas GIS State Association member (City of Russell, Kansas): Pledge to provide ongoing and on-site training assistance to city staff.

**8. Describe the project team, including their roles, responsibilities, and experience. (5 points)**

Our project team will consist of Mike Bair, City Administrator, Water/Sewer Department Superintendent, Rick Melcher and our Wastewater Department Superintendent, Greg Meier. Rick and Greg will be integral to collecting needs information from staff in their respective departments. They have 19 and 24 years utility experience respectively. Mike Bair will act as project coordinator and also data entry. Together with an outside consultant/provider they will develop the structure of the GIS data. Other employees such as repair staff in the field and secretarial staff in the office will also play a role in steering the project in the correct direction, as they are an integral part of the data in the GIS.

Other team members will include, GIS personnel working for Hamilton County, Katt Surveying and the South Central Nebraska RC& D.

**9. List the major milestones and a timeline for completing each milestone.**

**(5 points)**

<b>Milestones</b>	<b>Target Completion Date</b>
Secure Seed Funding	June, 2002
Complete Needs Analysis	June-August 2002
Collect and Develop Data	August 2002- December 2002
Implementation and Staff Training	December - February 2003

**10. Describe how the project will be sustained. (5 points)**

Once in place, the GIS utility data will need to be updated whenever any service, repair or installation activity takes place. An existing Utility Department employee will be designated as GIS Administrator, and he or she will be responsible for edits made to utility data. This will include facilitating further training of existing or new employees as needed. Additionally, existing City policy requires that Developers submit the final plats of new subdivisions in digital format; thus, insuring that future growth is easily incorporated into the city's GIS data base.

**11. Describe the project's evaluation plan, including measurement and assessment methods that will verify project outcomes. (10 points)**

Project outcome will be measured in stages. The measurement is to determine if each portion of the GIS system has been placed into operation and when the entire system has been completed, has it been posted to the World Wide Web and available to the public and contractors. The stages which will be evaluated are:

- Incorporation of the Hamilton County Assessor's GIS data base and air photos
- Incorporation of the water system information from the JEO data base
- Incorporation of the sewer system information from the JEO data base
- Creation of the City base map in the GIS system
- Creation of the GIS, City of Aurora website for public access
- Speaking to groups representing smaller communities, such as the Nebraska League of Municipalities, Nebraska Association of City Management and advising them of the process Aurora used to establish a GIS system.

The accomplishment of the above stages will be when the data has been collected and placed into the system. Measurement of these elements is simple, it either is there and works or it does not. If it does not, it will be debugged and made operational.

This project will be truly successful when other smaller Nebraska communities are able to apply the "Aurora Model" of using GIS resources available from other governmental and private sources.

Currently the staff has a strong sense of the number of citizen complaints concerning utility problems and maintenance issues and can compare the pre-GIS number of complaints to the post-GIS number of complaints. In addition, staff will be able to record and analyze the time to respond too, and fix service outages (something that we do not even currently measure) with the GIS, thus enabling us to monitor our customer performance.

## Financial Analysis and Budget (20 points)

The budget will be scored on reasonableness (up to 10 points), mathematical accuracy (up to 5 points), and the strength and appropriateness of the match (up to 5 points).

Provide the following financial information:

	<b>CTF Grant Funding</b>	<b>Cash Match (5)</b>	<b>In-Kind Match (6)</b>	<b>Other Funding Sources (7)</b>	<b>Total</b>
Personnel Costs(1)			\$4,500.00		\$4,500.00
Contractual Services (2)	\$24,850.00	\$0.00			\$24,850.00
Capital Expenditures (3) (Hardware, software, etc.)	\$ 0.00	\$7,500.00			\$7,500.00
Supplies and Materials	\$0.00	\$1,000.00			\$1,000.00
Telecommunications					
Training					
Travel					
Supplies and materials					
Other costs (4)			\$15,000.00		\$15,000.00
<b>TOTAL</b>	\$24,850.00	A \$8,500.00	B \$19,500.00		C \$52,850.00

Match Percent = 54%

Match Requirement: This grant requires a 20% match. Please calculate your match by using the formula below to ensure your application meets this requirement:

Total Cash Match (A) + Total In-Kind Match (B)  
\_\_\_\_\_  $\geq .20$       $\$28,000 / \$52,850 = .54$

Total Project Cost (C)

### **Financial Narrative Notes and Instructions**

Several categories (see below) **require** further itemization.

Please include estimated number of hours or full-time equivalent (FTE) by position. Include separate totals for salary and fringe benefits. If it is necessary to itemize on a separate sheet, include only the subtotal in this table.

1. Please itemize other contractual expenses on separate sheet.
2. Please itemize capital expenditures by categories (hardware, software, network, and other) on a separate sheet.
3. Please itemize other operating expenses on a separate sheet.
4. Please indicate the source of any cash match.
5. Please indicate the source of any in-kind match and how it will be documented.
6. Please provide a breakdown of any other external funding sources. Sources of external funds may include grants from federal agencies or private foundations.

Please keep supporting documentation to a minimum. For example, rather than including a printout of a quotation from Dell for a new computer, include all relevant information in the budget narrative.

**BUDGET ANALYSIS:**

**CONTRACTUAL SERVICES**

Project Manager: 30 hours x \$120 p/hr. Represent client, manage day to day GIS database creation activities, QA/QC manager, keep project on schedule.	\$3600
GIS Programmer: 30 hours x \$95 per hour Create custom application interface analysis system, create and administer web based GIS IMS.	\$2850
GIS Technician: 240 hours x \$75 p/h Data collection, data entry, data verification.	\$18000
Field Technician 8 hours x \$50 p/h Collect field data with GPS unit. Perform field corroboration of as-built data.	\$400
TOTAL: \$24,850.00	

Time and cost estimates provided by GIS Workshop, Inc.

**BUDGET ANALYSIS:**

**PERSONNEL EXPENSE (IN – KIND)**

	<u>HOURLY</u>	<u>FICA</u>	<u>INSURANCE</u>	<u>PENSION</u>	<u>TOTAL</u>
	\$	\$	\$	\$	\$
Project Administrator	33.18	2.54	1.35	2.32	39.39
Water/Sewer Commissioner	17.19	1.32	3.17	1.20	22.88
City Clerk	16.43	1.26	2.08	1.15	20.92
Waste Water Superintendent	18.61	1.42	3.17	1.30	24.51

	<u># HOURS</u>	<u>ON</u>	<u>RATE</u>	<u>TOTAL</u>
	<u>PROJECT</u>			<u>COST</u>
			\$	\$
Project Administrator	40		39.39	1,575.63
Water/Sewer Commissioner	80		22.88	1,830.27
City Clerk	24		20.92	502.01
Waste Water Superintendent	24		24.51	588.15
<b>GRAND TOTAL</b>				<b>\$ 4,496.06</b>

Funds will come from the  
City of Aurora 2002 budget

Public accounting  
requirements will be met  
and expenditure subject  
to public audit laws.

**BUDGET ANALYSIS:**

**CAPITAL EXPENDITURES (SOFTWARE)**

SOFTWARE: One (1) copy of ESRI ArcView 8.1 GIS software \$3,500.00

Purchase to be funded by City funds, cash on hand. Public accounting requirements will be met and expenditure subject to public audit laws.

**CAPITAL EXPENDITURES (HARDWARE)**

HARDWARE: One (1) HP 750c Printer \$4,000.00

Purchase to be funded by City funds, cash on hand. Public accounting requirements will be met and expenditure subject to public audit laws.

**BUDGET ANALYSIS:**

**Supplies and Materials (In-Kind)**

Printer Stand	\$250:00
Computer supplies	\$200.00
Printer supplies	\$200.00
Filing cabinet/misc.	\$350.00
TOTAL	\$1,000.00

Purchase to be funded by City funds, cash on hand. Public accounting requirements will be met and expenditures subject to public audit laws.

**BUDGET ANALYSIS:**

**OTHER COSTS (IN-KIND)**

Value of data being contributed by JEO	\$15,000.00
Water System	\$3,500
Sewer System	\$3,500
Sanitary storm	\$3,500
City base map	\$2,500
City Zoning map	\$2,000

Material is the proprietary data of JEO and Associates and will be contributed to this project (see JEO letter of support). Based on what JEO has charged customers in the past to develop and provide similar digital information.